

University of California Cooperative Extension Water Resources/Water Quality Program LID Efforts

Yesterday, Today and Tomorrow

Darren L. Haver

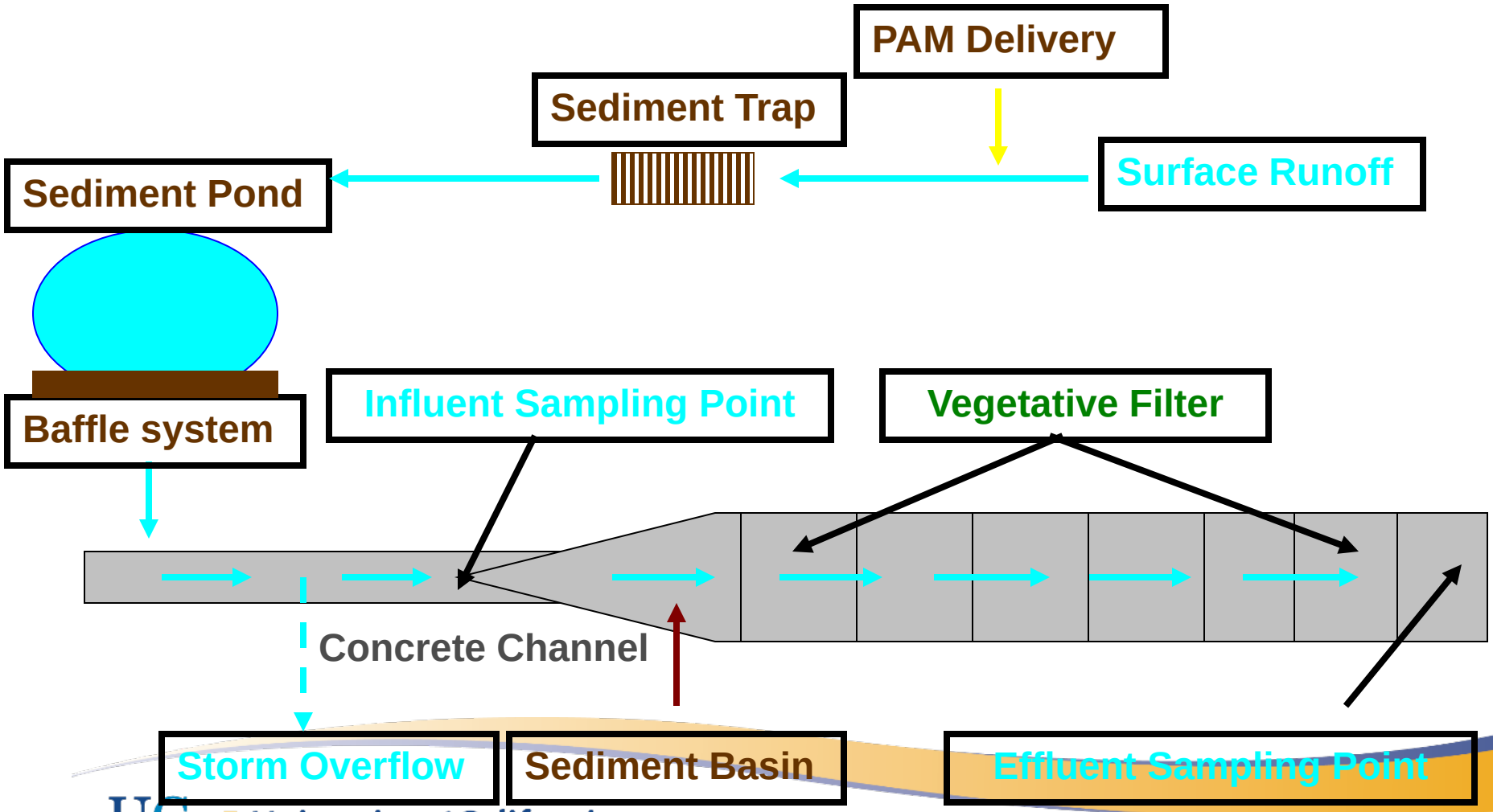
Water Resources/Water Quality Advisor

UCCE Orange County

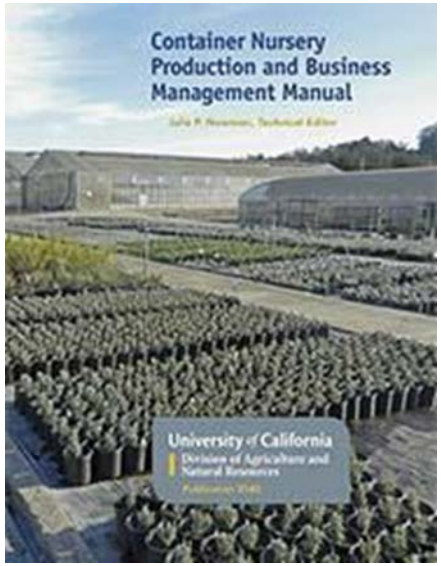
UC CE University of California Agriculture and Natural Resources Cooperative Extension

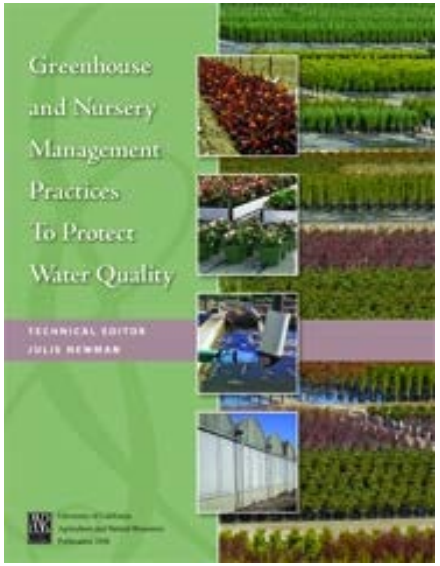
History of UCCE LID Efforts

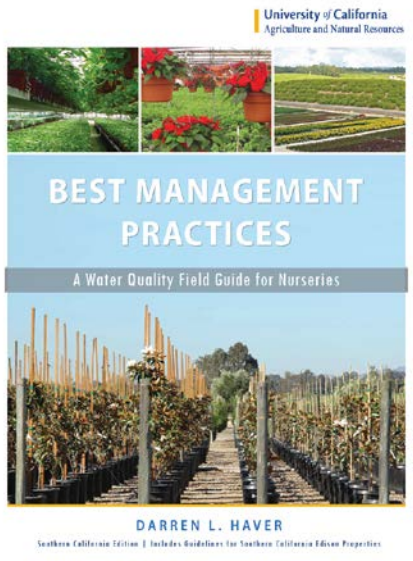
- Improve design and layout of production nurseries to improve water quality.
- Design and implement treatment trains for surface runoff where recycling wasn't economically feasible.


PAM Delivery
Sediment Trap
Surface Runoff
Sediment Pond
Baffle system
Influent Sampling Point
Vegetative Filter
Concrete Channel
Storm Overflow
Sediment Basin
Effluent Sampling Point

UC ANR Resources







History of UCCE LID Efforts cont.

- Monitoring of agriculture runoff in urban environments.
  - Edge-of-field vs. tributaries downstream
  - Agriculture pollutant “fingerprints” and urban pollutant “fingerprints”

Overall Conclusions

- Modifying field layouts and overall design allows for better control of overland flows and pollutant mitigation.
- Successful mitigation of runoff from nursery and agricultural production systems typically requires a series of treatment practices.
- One “size” doesn’t fit all situations.

Initial LID Observations

- Efforts targeted water quality improvements
  - Linked to water conversation efforts
- Observational survey of structural management practices in both commercial and residential landscapes.

Challenges in Managing Runoff from Existing Landscapes

Solutions in Managing Runoff from Existing Landscapes

Landscape Demonstration Sites

South Coast Research & Extension Center

Graphics: Clark & Green

Landscape Demonstration Sites

South Coast Research & Extension Center

LID 1

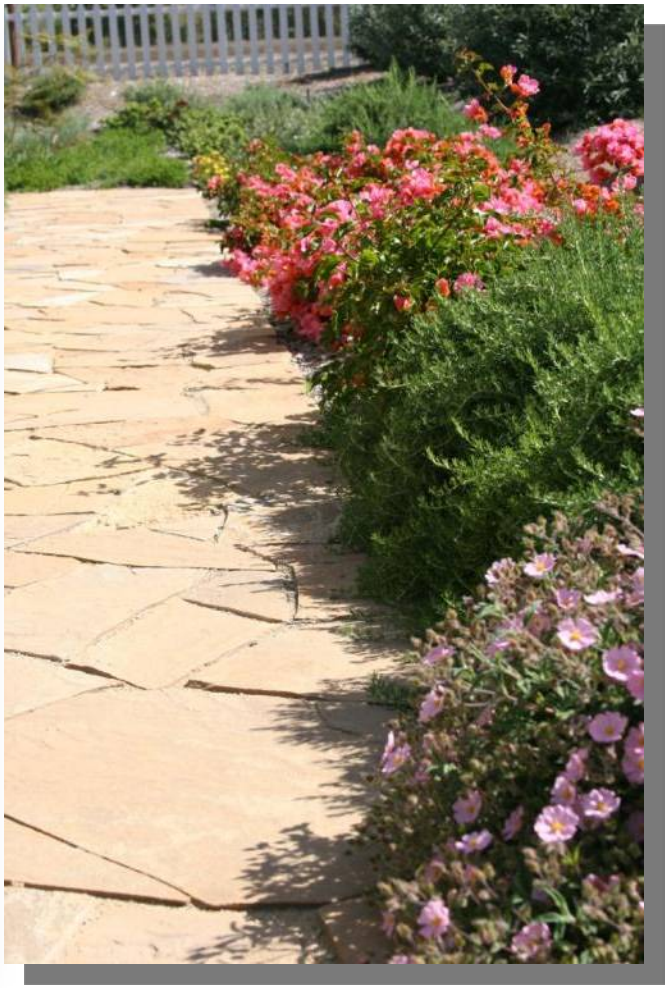
Graphics: Clark & Green

Landscape B

Low Impact Design I Hardscape

Landscape B

Low Impact Design I Hardscape



Landscape Demonstration Sites

South Coast Research & Extension Center

Graphics: Clark & Green

Landscape C

Low Impact Design II Hardscape

Landscape C

Low Impact Design II Hardscape

Water Use & Surface Runoff

Landscape Type	Daily Average Water Use in Gallons (Feb 07-April 08)	Daily Average Surface Runoff in Gallons (Feb 07-April 08)
Typical	879	21
LID Type 1	287	6
LID Type 2	372	8

Landscape Type	Daily Average Water Use in Gallons (Feb 07-Feb 11)	Daily Average Surface Runoff in Gallons (Feb 07-Feb 11)
Typical	447	69
LID Type 1	182	16
LID Type 2	198	36

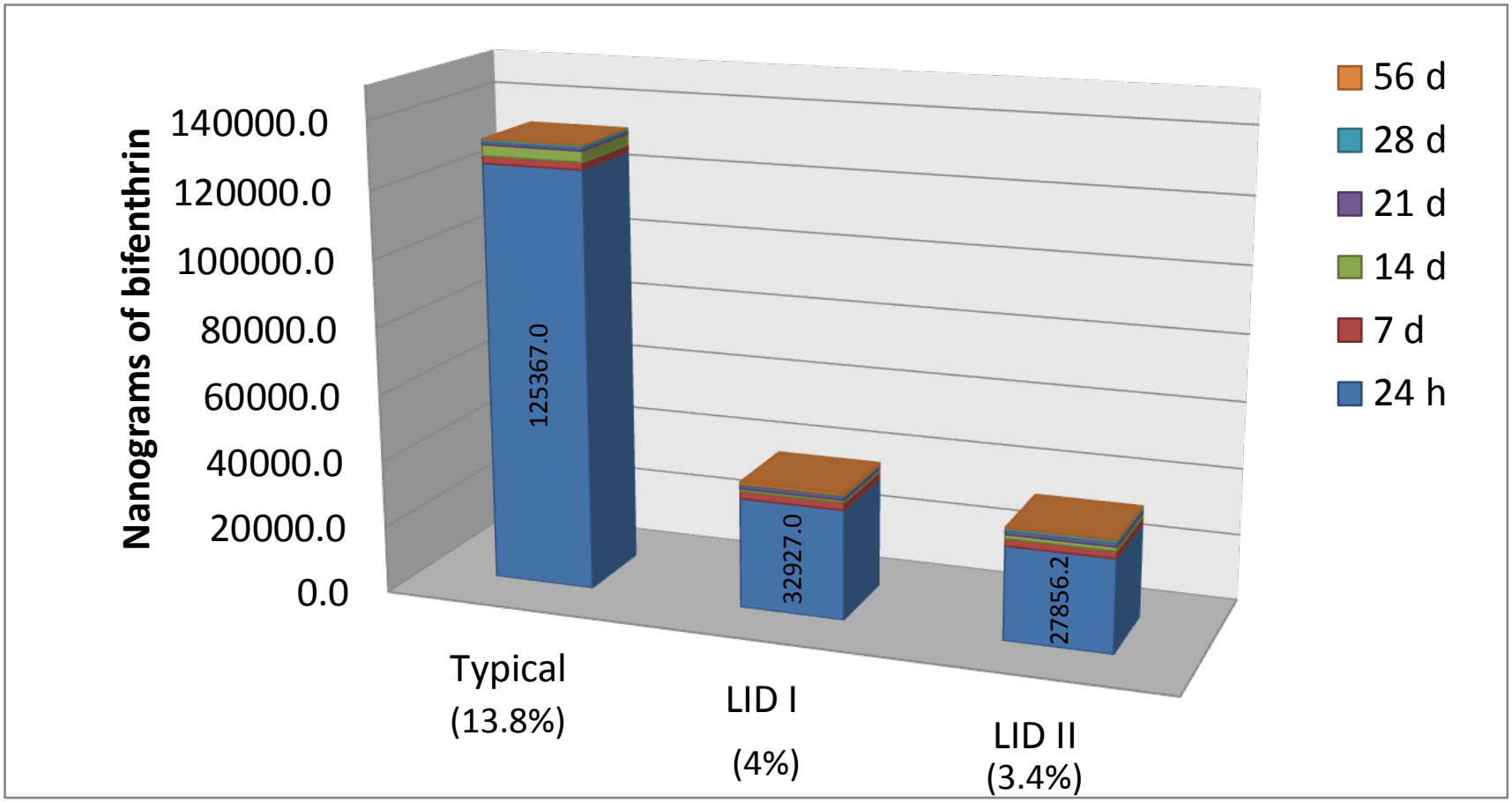
Water Use & Surface Runoff

Landscape Type	Daily Average Water Use in Gallons (Feb 07-April 08)	Daily Average Surface Runoff in Gallons (Feb 07-April 08)
Typical	879	21
LID Type 1	287	6
LID Type 2	372	8

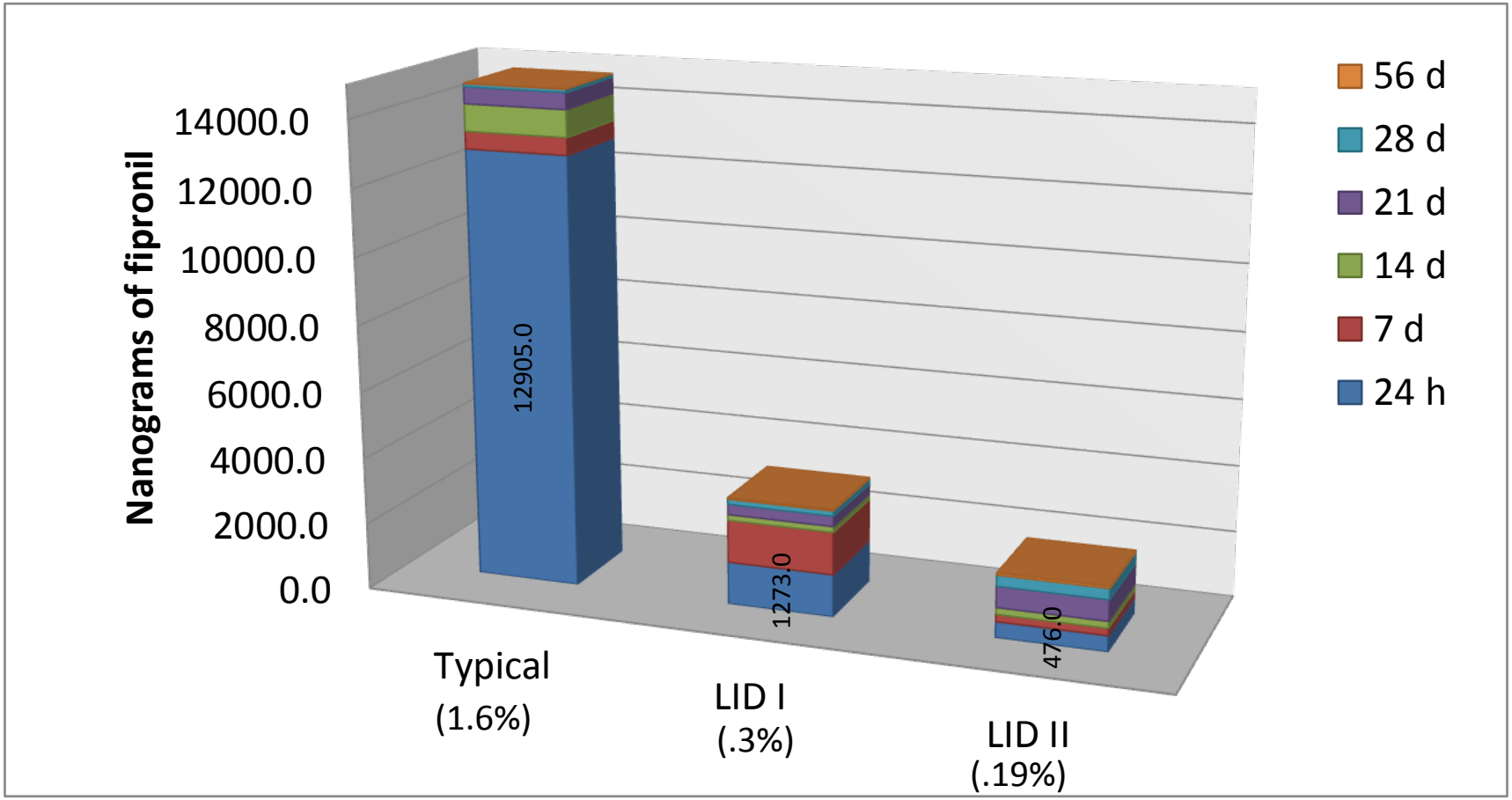
Landscape Type	Daily Average Water Use in Gallons (Feb 07-Nov 15)	Daily Average Surface Runoff in Gallons (Feb 07-Nov 15)
Typical	520	12
LID Type 1	348	3
LID Type 2	212	5

Typical = 2500 sq. ft. LID Type I = 2447 sq. ft. LID Type 2 = 2136 sq. ft.

Bifenthrin Loading from Hardscape Washing



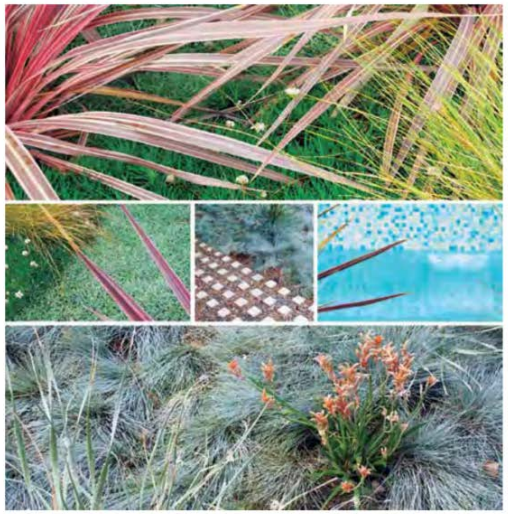
Fipronil Loading from Hardscape Washing



Conclusion of Current LID Efforts

- LID strategies are effective at reducing runoff and associated pollutants.
- Additional research required to determine long-term effectiveness and impact of maintenance schedules.

UC ANR Resources



Runoff Water and Garden Design

A University of California Research Project

http://ccuh.ucdavis.edu/academia/runoff/research

Future LID Efforts

- Collaborate with industry and agencies to develop LID evaluation projects at South Coast REC.
- UC participation in the design, implementation, and long-term evaluation of LID strategies.









Agenda

7:30-8:00 AM - Refreshments & Sign In

8:00-8:45 AM - Introduction, Darren Haver, Ph.D., Water Resources Advisor, Director - UC Cooperative Extension Orange County & South Coast Research and Extension Center
University of California Water Resources/Water Quality Program: Yesterday, Today and Tomorrow

8:45-9:00 AM - Orange County MS4 Permit LID Requirements – Christy Suppes, Environmental Resources Specialist, County of Orange

9:00-10:00 AM - Working with Nature: Compost-Based BMPs in LID and Green Infrastructure Applications, Britt Faucette, Ph.D., Filtrexx
Applying the Principles and Science of Sustainable Site Development in the Field

10:00-10:15 AM - Break

10:15-11:00 AM - Green Wall Design, Mark Woolbright, Filtrexx
New Innovations in Living Walls and their Benefits for a Drought Challenged Landscape

11:00-11:30 AM - Low Impact Development with a New Twist, Craig Kolodge, Ph.D., Filtrexx
A New Approach to Integrating California Environmental Goals with Low Impact Development Programs and Case Studies

11:30 AM-12:30 PM - Field Tour of LID Applications and Designs Integrating Locally Recycled Organics